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The effect of demographic diversity in top management team and in board of directors on fraudulent financial reporting

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The effect of demographic diversity in top management team and in board of directors on fraudulent financial reporting

by

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Abstract

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This study examined how demographic diversity present in the top management team and in the board of directors may influence the likelihood of a firm's fraudulent financial reporting. It also evaluated board demography *with respect to* top management team demography to detect whether demographic dissimilarity between the two groups can enhance monitoring effectiveness, resulting in lower likelihood of fraudulent financial reporting. Data from the top management teams and boards of directors of 90 firms – 30 firms accused of financial statement fraud and 60 matched firms – revealed a strong negative relationship between the likelihood of fraud and top management team diversity and board diversity, measured by variances in age, tenure, gender, functional background, and educational background.

Keywords: Corporate governance, board monitoring, board diversity, top management team diversity, top management fraud, fraudulent financial reporting

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Contents

Introduction

Despite the legislative and regulatory changes that quickly followed the spate of corporate scandals a decade ago in the United States, firms that engage in intentional, fraudulent financial reporting continue to threaten viable equity markets, remaining a public concern. Previous studies have examined the relationship between top management team (TMT) characteristics and corporate wrongdoing (e.g., Daboub, Rasheed, Priem, and Gray, 1995; Hambrick and D'Aveni, 1992; Williams, Barrett, and Brabston, 2000; Dunn, 2004), acknowledging that corporate illegal activity results from managerial decisions (Simons, Pelled, and Smith, 1999; Daboub et al., 1995; Zahra, Priem, and Rasheed, 2005). Others have focused on the association between board of director composition – for instance, outside director ratio – and fraudulent financial reporting (Beasley, 1996; Beasley, Carcello, Hermanson, and Lapides, 2000), emphasizing the role of the boards of directors in monitoring and controlling firms.

However, studies that simultaneously look at the characteristics of both top management team and board are scarce, and there do not appear to be any study examining board demography *with respect to* top management team demography, nor any study, aside from that of gender, connecting board demography with corporate illegal behavior. This is an important void considering the relationship between top management teams and boards in the context of financial fraud; top management is typically the entity committing corporate fraud (as opposed to individual fraud, in which case the individual, rather than the corporation, benefits from the illicit behavior (Clinard and Quinney, 1973; O'Connor, Priem, Coombs, and Gilley, 2006; Zahra et al., 2005)), whereas the board is

primarily responsible for monitoring management within public corporations (Jensen, 1993; Zahra et al., 2005).

This study makes an empirical investigation on whether the demographic composition of boards, with respect to that of top management teams, can affect the likelihood of fraudulent financial reporting. In particular, this study builds on existing literature on top management team and board diversity (e.g., Hambrick, Cho, and Chen, 1996; Carter, Simkins, and Simpson, 2003; Daily and Dalton, 2003), grounded in the upper echelon's perspective (Hambrick and Mason, 1984), to examine and test the prevailing argument that the homogeneity of the boards and TMTs as groups of "aging white males" raises significant ethical issues (Ramirez, 2003; Carver, 2002). The following sections first discuss the theoretical developments on the antecedents of financial statement fraud and on top management team and board diversity to advance the argument that diversity will reduce the likelihood of fraudulent financial reporting. Then, the sample and research design are introduced, with reports of tests using matched-pairs analysis of firms that did and did not engage in fraudulent financial reporting (cf. Beasley, 1996; Dunn, 2004; O'Connor et al., 2006; Erickson, Hanlon, and Maydew, 2006). The study concludes with discussions on the implications of the findings for practitioners and scholars interested in corporate governance.

Theoretical Background And Hypotheses

Research on corporate illegal activity has considered a wide variety of determinants or influencers, some internal and some external to the organization (Baucus and Near, 1991; Daboub et al., 1995). Some have found that firms in certain industries are more likely to commit illegal acts

(Baucus and Near, 1991), explaining the phenomenon as firms falling under societal pressure to behave illegally (Sutherland, 1956; DiMaggio and Powell, 1983). Firm-level antecedents such as financial distress (Baucus and Near, 1991; Erickson et al., 2006) and culture (McKendall and Wagner, 1997) have also been identified. Notably, top management team demographic characteristics such as age, experience, and education have been treated as neutralizing or enhancing moderators to these antecedents, although not empirically tested (Daboub et al., 1995; Zahra et al., 2005). The reasoning behind the suggested moderating relationship is either that illegal behavior resides at lower levels of management, requiring top management's control and ethical leadership (Vaughan, 1983), or that commission of fraud ultimately involves individual top manager's decisions to participate or acquiesce in the face of internal and external pressures (Zahra et al., 2005).

This study specifically focuses on one type of corporate fraud: fraudulent financial reporting. This distinction, although seldom made in management literature, is important, for the level of organization involved in illegal activity depends on the nature of the violation (Clinard and Yeager, 1980). Overwhelming instances among recent corporate financial fraud cases have taken the form of "intentional misrepresentation of amounts or disclosures in the financial statements" (Apostolou, Hassell, and Webber, 2000: 181), undertaken to materially mislead others about the real value of the firm's assets, transactions, or financial position (Beasley, 1996). Because financial statement fraud can have substantial negative consequences for the firm, investors, and market, it is of serious concern for many, including academics that have extensively researched on the topic. Insights from multiple studies point out a few key common characteristics found in fraudulent financial reporting cases. First, it is the top managers who carry out financial statement fraud. More than 80% of

financial statement fraud cases made public by the Securities and Exchange Commission (SEC) during 2008, for example, contained names of C-level company officers who participated in the fraudulent scheme, 24% of whom were chief executive officers and another 44% either chief financial officers, chief accounting officers, or controllers (Bishop and Hydoski, 2009). Second, there exists an incentive or a pressure to misstate earnings, which arises due to pressure to meet analysts' forecasts and rapid growth (Bell and Carcello, 2000), compensation and incentive structures (Lie, 2005), the need for external financing (Dechow, Sloan, and Sweeney, 1996), or poor performance (Rosner, 2003); each of these incentives and pressures are found to increase the likelihood of fraudulent financial reporting. Third, circumstances provide an opportunity for fraud to be perpetrated, for example through weak controls or the ability of management to override controls (Hogan, Rezaee, Riley, and Velury, 2008). Several studies have shown a relationship between ineffective monitoring in the form of weak governance and a higher likelihood of fraud, many of which highlighted the role of the boards. For example, Dechow et al. (1996) find that firms manipulating earnings are more likely to have less independent boards, more likely to have CEOs who are also board chairs, more likely to have a CEO who is also the firm's founder, less likely to have an audit committee and less likely to have an outside blockholder. Farber (2005) finds that fraud firms have poor governance relative to no-fraud firms, characterized by fewer independent board members, fewer audit committee meetings, fewer financial experts on the audit committee, a smaller percentage of Big 4 auditing firms, and a higher percentage of CEOs who are also chairman of the board. Dunn (2004), comparing a sample of 113 firms subject to accounting enforcement releases during the period 1992-1996 with a matched sample of 113 firms, find that firms with a concentration of structural and ownership power in

the hands of insiders (executive directors) are more likely to commit financial statement fraud. Finally, fraudulent financial reporting inherently involves prior intent to deceive and is invariably outside the law, making it clearly distinguishable from earnings management or restatements (Erickson et al., 2006).

Research connecting governance mechanisms to financial statement fraud to date has focused almost solely on board independence and incentive alignment. Except for studies that looked at directors' financial expertise or gender, no attention has been paid to the demographic characteristics of the board. Also, there has been no empirical investigation on the effects of top management team demographic characteristics on fraudulent financial reporting. Although other characteristics of the board might also be fruitfully examined, the theoretical focus of this study is restricted to demographic diversity, especially with respect to top management team characteristics, because demography is an important, causal variable that affects a number of intervening variables and processes and, through them, a number of organizational outcomes (Pfeffer, 1983).

Social psychology research has shown that demographic similarity among group members is a determinant of interpersonal attraction (Byrne, 1971), which in turn enforces group cohesiveness, and eventually social control (Daboub et al., 1995). Similarity or homogeneity is known to engender pressures for conformity and groupthink (Janis, 1983): facets that frequently appear in anecdotal evidence of recent financial statement fraud cases in the early 2000s (Ramirez, 2003). Given that top management teams are responsible for engaging in financial statement fraud, it may be fruitful to examine if homogeneous top management teams are more likely to discourage inquiry and self-censor, leading to an increased likelihood of corporate fraud, as previously suggested but empirically

untested in research (Daboub et al., 1995). Theory suggests that the tendency of homogeneous groups to converge on a single solution may result in premature consensus on a faulty solution, before other viable alternatives have been evaluated (Priem, Harrison, and Muir, 1994). Asserting that fraudulent financial reporting is a result of faulty decision-making on the part of the top management team, the following hypothesis is presented.

> *Hypothesis 1. Firms with demographically diverse top management teams are less likely to engage in fraudulent financial reporting.*

Board Diversity and Fraud

The board of directors' vital role in corporate governance has been well documented since Fama and Jensen (1983) has identified it as the single most important internal control mechanism. Although the link between board diversity and corporate governance is relatively a new one, generated by shareholder proposals and government mandates (Fields and Keys, 2003), researchers have been conceptualizing and studying the effects of group diversity voluminously (Harrison and Klein, 2007). Following prior work, this study defines top management team or board "diversity" as the "distribution of differences among the members of a unit with respect to a common attribute" (Harrison and Klein, 2007).

The economic rationale behind diversity as a positive attribute of boards stems from two main perspectives: resource dependency theory (Hillman and Dalziel, 2003) and agency theory (Jensen and Meckling, 1976 and Fama, 1980). These two theories relate to the two generally accepted main tasks of boards: respectively, their service task and control task (Forbes and Millken, 1999). Under the resource-based view, board diversity is associated with the pool of resources offered by directors,

namely their pool of knowledge, information, network ties, reputation, etc. (Hillman, Cannella, and Paetzold, 2002), which in turn is posited by many studies to affect multiple output variables such as creative decision making, R&D spending, firm performance, and innovation (Barker and Mueller, 2002, Carter et al., 2003). The latter associates board diversity with its monitoring and control performance. In fact, it is argued that a critical mass of diverse opinions is needed for critical inquiry (Konrad, Kramer, and Erkut, 2008), consistent with research on group or top management team diversity.

Board composition has been identified as an important firm-level antecedent to corporate fraud by Zahra et al. (2005). At the same time, homogeneity of boards has long been argued to have negative influences on board performance, as it leads to a dysfunctional state characterized by a reduction in independent critical thinking and strife for unanimity (Janis, 1983). Typically, however, existing empirical research has narrowly focused on gender and race when it comes to demographic variables' impact on boards' control performances. Building on prior work, this study forwards the following hypothesis.

> *Hypothesis 2. Firms with demographically diverse boards are less likely to engage in fraudulent financial reporting.*

Recent evidence has shown that demographic similarity between the chief executive officer and board members may hinder or weaken the board's ability to effectively monitor management (Hwang and Kim, 2009), raising the question if demographic characteristics of the board should be analyzed in relation to that of the top management in providing an explanation for governance outcomes. Similarity attraction (Byrne, 1971) and social categorization (Tajfel, 1981) theories suggest that

demographic homogeneity fosters homophily, engendering social and behavioral integration. In fact, Hwang and Kim (2009) argued that the homophily between directors and CEOs, assumed to come from their demographic similarities, was what prevented the directors from adequately monitoring the performance of CEOs and instead encouraged the directors to give out favorable evaluations of the CEOs.

Conversely, theory suggests that individuals with different backgrounds are more likely to disagree with each other; dissimilarity inherently accompanies differences in position or opinion among unit members, reflecting disagreement, conflict, distrust, or opposition (Harrison and Klein, 2007). Research points out that diversity, in the sense of differences in beliefs, values, opinions, or attitudes, is required for critical and investigative interaction processes to be possible (Amason, 1996). This cognitive conflict can enhance the board's control performance, because it "may require CEOs to explain, justify, and possibly modify their positions... can serve to remind management of the power and role of the board and of the importance of considering shareholder interests" (Forbes and Milliken, 1999).

When directors of boards interact with top managers and vice versa, their demographic similarity or dissimilarity will influence their willingness to question and criticize each other's decisions. The monitoring capability of boards that are demographically dissimilar to respective top management teams will be more superior, resulting in more effective governance outcomes.

Hypothesis 3. Firms with boards that are demographically similar to top management teams are more likely than firms with boards that are demographically dissimilar to top management teams to engage in fraudulent financial reporting.

Methods

Data and Sample

This study relies on the Accounting and Auditing Enforcement Release (AAER) reported by the Securities and Exchange Commission (SEC) to identify firms that committed fraudulent financial reporting. Following prior literature that focused on this relatively rare event of fraudulent outcomes, this study used a matched-pair design (cf. Beasley, 1996; Dunn, 2004; O'Connor, 2006; Erickson et al., 2006) instead of random sampling, as described below.

The SEC issues an AAER to any firm that it convicts of a security law violation (Dunn, 2004). AAERs are summaries of the SEC's accounting-based enforcement actions and describe the SEC's investigations of alleged violations of accounting provisions of the securities laws. Because the sample of firms in this study is based on SEC allegations of fraud, it is free of researcher classification bias (Erickson et al., 2006). AAERs represent one of the most comprehensive sources of financial statement fraud in the U.S. (Beasley, 2000) and offer a significant advantage by providing an objective criterion for identifying companies with fraudulent financial reporting occurrences (Bonner et al., 1998).

All of the AAERs from 2009 to 2012 were read (522 entries), but only the cases of firms that engaged in financial statement fraud were included in the sample. Excluded are repeat accusations (178 entries), alleged fraud by brokers and dealers as well as professional misconduct by auditors (101 entries), and financial firms (44 entries). A firm is also deleted from the sample if lacking sufficient disclosure. That is, firms without public filings of 10-K and proxy statement (DEF14A) with the SEC for the precise year or without enough financial information on Compustat are excluded. Cases where fraud begins before 1998 or after

2007 are taken out from the sample. Because this study uses a matched sample of firms not accused of accounting fraud, some firms are deleted from the sample if there is a lack of availability of data on matching firms. This results in a sample of 30 firms that are both accused of fraud by the SEC and for which there is adequate data. AAER cases on 24 of the 30 firms accused of fraud specifically named one or more C-level executive (80%).

Each of the 30 firms accused of financial statement fraud are matched with two firms not accused of fraud, based on industry (two-digit Standard Industrial Classification (SIC) code), year, and firm size (total assets) in the year before the beginning of the fraud. Thus, there are 60 matched sample firms and 90 firms in total for this analysis. The two samples are not statistically different with respect to total assets, book value per share, and net income (see Table 1), as well as to some other variables. The sample is also distributed across a number of years and industries, and is not skewed to represent any single year or industry in particular (see Appendix). In effect, the matching process controls for year-effects, industry-effects, and size-effects that are generally controlled by separate variables (O'Connor et al., 2006; Erickson et al., 2006).

Information pertaining to management and board of directors was collected from ExecuComp, Item 10 of the annual 10-K report, proxy statements, and *Marquis Who's Who* database. Firm financial data and demographic data are from the year prior to the beginning of the alleged fraud period.

Table 1

Comparison of the 30 firms accused of fraud with 60 matched firms ($ millions)

Variable		Mean	Standard Deviation	Difference in Mean (*p*-value)	Difference in Median (*p*-value)
Total_assets					
	Accused of fraud	2643.85	3255.96	0.888	0.971
	Matched sample	2774.49	3845.16		
BV_per_share					
	Accused of fraud	11.84	8.23	0.638	0.781
	Matched sample	10.93	6.41		
Net_income					
	Accused of fraud	111.49	322.55	0.967	0.901
	Matched sample	107.88	345.28		

Measures

TMT is the top management team, defined as the very top-level executive of a firm (chairman, CEO, president, COO, CFO) plus the next level (title varies depending on firm: e.g. vice chairman, executive vice president). This operationalization, used in prior top management team studies (Wiersema and Bantel, 1992; Finkelstein and Hambrick, 1996; Carpenter, 2002), yields more consistency across sample than if all executives above the vice-president level are included (e.g. Hambrick et al., 1996). This definition yielded a mean top management team size of 5.24 (standard deviation of 1.84) executives. *BOARD* indicates all members of the board as of the year before the beginning year of the alleged period. *OUTSIDE BOARD* only includes directors who are not currently employed by the firm. The sample in this study has a mean board size of 8.39 (standard deviation of 2.56) directors and an average of 5.97 (standard deviation of 2.13) outside directors. Altogether, there are 1,069 individuals in the sample, who either serve as executive or director of one of the 90 firms. Their average age is 56.14 and average tenure 9.04. Also, 6.17% of all individuals in the sample are female.

This study examined five types of demography indices: company tenure, age (numeric data), gender, functional background, and educational background (categorical data). *TENURE* is the number of years spent in the firm. For non-executive directors, this is the number of years a director has been on the board. *AGE* is calculated as of the year before the beginning year of the alleged fraud period. *GENDER* is coded 0 if male and 1 if otherwise. *FUNCTION* is coded from 1 to 8 depending on the functional background category listed in the Appendix. 1 through 6 follows a categorization often used in top management studies (Barker and Mueller, 2002), whereas 7 and 8 were added in order to account for the directors whose primary occupation is neither corporate nor financial (Rosenstein and Wyatt, 1990) and thus are often categorized separately, for example as "community influentials" (Hillman, Cannella, Paetzold, 2000). *EDUCATION* is coded from 1 to 5 as listed in the Appendix, following previous studies (Wiersema and Bantel, 1992; Carpenter, 2002). Codification was based on each individual's undergraduate disciplines unless he or she had a graduate degree other than an MBA, in which case the corresponding graduate disciplines were coded. Accordingly, educational background depends on the highest known degree the individual earned.

Following previous studies, standard deviation is used to measure *AGE* and *TENURE* diversity. To compute diversity scores of categorical data, i.e., gender, functional background, and educational background, Teachman's index (1980) was used (Pelled et al., 1999; originally developed by Shannon, 1948). Teachman's index (also called entropy index) is measured as the following:

$$D = -\sum Pi(lnPi), \quad (1)$$

where *D* is the diversity score, *Pi* the percentage of group (top management team or board or outside board, etc.) members in each category. The properties of Teachman's index are qualitatively similar to those of the Blau index although it is more sensitive to small differences in the demographic composition of groups since it is a logarithmic measure of diversity (Baumgartner, 2006; Campbell and Minguez-Vera, 2008). When a category is not represented, one would only use the *Pi* values for the other categories to compute *D*, since one cannot set *Pi* equal to zero, for the natural logarithm of zero does not exist (Pelled et al., 1999).

Dependent variable. The dependent variable, *FRAUD*, is a binary variable coded as 1 if the firm is accused of fraud, and 0 otherwise.

Independent variables. *TMT_DIVERSITY* is a summative measure, capturing the overall demographic diversity in TMT rather than differences on individual dimensions alone (Jehn et al., 1999; Polzer et al., 2002; Li and Hambrick, 2005). The five scores were standardized (mean x = 0, s.d. = 1), and then were added together. *BOD_DIVERSITY* is also a summative measure, calculated in the same way as *TMT_DIVERSITY*. *DELTA_DIVERSITY* is a summative measure that only accounted for age, gender, functional background, and educational background, excluding tenure. First, age was switched into a categorical variable coded as 2 if the individual can be categorized as one of "baby boomer" generation (born between 1946 and 1964, according to demography scholars), 1 if older (widely categorized as "oldies" by scholars), and 3 if younger. Only 17 out of 1069 individuals fall under 3; the majority of the sample consist of individuals coded as 1 or 2. Second, diversity scores (Teachman's indexes, 1980) for the four variables were calculated. Teachman's (1980) indexes are not directly comparable when the number of categories is not the same across diversity variables; maximum possible variety increases with unit

size, meaning there is a richer set of possible information categories to draw from (Harrison and Klein 2007). A way to standardize Teachman's index (1980) is to divide by its theoretical maximum, yielding the Index of Quality Variation, an index often used to operationalize availability of unique sources of information or social capital (Marsden, 1990). Hence, this study standardized the four diversity scores, each for the TMT and for the combined group of TMT and outside directors. Then, the difference between each score for TMT and for the combined group was measured, capturing the effect that inclusion of outside directors has on the diversity score of the given TMT. Differences, or delta measures, were then summated to equal *DELTA_DIVERSITY*.

FACTIONAL_FAULTLINE_SIZE, its definition and calculation, is directly taken from Li and Hambrick (2005):

$$F = \frac{|X_A - X_B|}{\frac{\sigma_A \sigma_B}{2} + 1} \quad (2)$$

where X_A and X_B are the means of each faction on a particular demographic dimension, and σ_A and σ_B are the standard deviations of each faction on that dimension, with a constant of 1 added, to handle cases when both factions are completely homogenous (Li and Hambrick, 2005). In this study, it is assumed that the top management team and the outside directors each form a factional group. According to Li and Hambrick (2005), the overall size of the factional faultline captures the total sum of demographic differences between two factions, and increases when the two factions show wider differences in the averages or central tendencies and when each faction is relatively tightly clustered around its own central tendency. Due to the limitation of the measure as discussed in Li and Hambrick (2005), only the age, tenure, and gender variables were

included in the calculation.

Control Variables. A number of control variables are added. *TMT_SIZE, TMT_MEAN_AGE, TMT_MEAN_TENURE, TMT_MEAN_GENDER* are included in the regression testing for the relationship between *TMT_DIVERSITY* and likelihood of Fraud. Similarly, *BOD_SIZE, BOD_MEAN_AGE, BOD_MEAN _TENURE, BOD_MEAN_GENDER* are included in the regression testing for the relationship between *BOD_DIVERSITY* and likelihood of Fraud. For Model 3 testing the relationship between *DELTA_DIVERSITY* and the likelihood of Fraud, *GROUP_SIZE* and *SUBGROUP_IMBALANCE* are included as control variables. *SUBGROUP_IMBALANCE* controls for the unevenness of the subgroup sizes (i.e., TMT and outside directors) and is measured as the absolute percentage of difference between the ratio of the two subgroup sizes (e.g., 4/6 or .67) and equality (.50), following Li and Hambrick (2005).

Data Analysis and Results

Table 2 presents the means, standard deviations, and the correlation matrix of all variables included in the study. Table 3 contains the results of the tests for differences between the firms accused of financial statement fraud and matched firms for the three variables of interest.

Table 2

Descriptive statistics and correlation matrix

Variable	Mean	s.d.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Fraud	0.33	0.47														
2. TMT_diversity	1.11E-11	2.57	-0.25 **													
3. TMT_size	5.24	1.84	0.19 *	0.37 ***												
4. TMT_mean_age	51.41	4.67	-0.23 **	0.17	-0.21 **											
5. TMT_mean_tenure	9.97	6.51	0.00	0.21 **	-0.05	0.55 ***										
6. TMT_mean_gender	0.05	0.10	-0.10	0.39 ***	0.01	-0.08	0.02									
7. BOD_diversity	-1.11E-11	2.72	-0.23 **	0.35 ***	0.05	0.17	0.31 ***	0.04								
8. BOD_size	8.39	2.56	-0.10	0.21 **	0.01	0.30 ***	0.35 ***	0.05	0.44 ***							
9. BOD_mean_age	58.37	4.47	-0.28 ***	-0.02	-0.21 **	0.57 ***	0.31 ***	-0.14	0.25 **	0.33 ***						
10. BOD_mean_tenure	9.21	4.12	-0.19 *	0.14	-0.08	0.41 ***	0.61 ***	-0.04	0.35 ***	0.30 ***	0.50 ***					
11. BOD_mean_gender	0.06	0.09	0.04	0.29 ***	0.08	0.05	0.08	0.22 **	0.56 ***	0.13	-0.03	-0.03				
12. Factional_faultline_size	2.33E-10	1.42	0.01	-0.15	-0.15	-0.28 ***	-0.08	0.44 ***	0.17	-0.03	0.07	0.02	0.27 ***			
13. Delta_diversity	-0.62	0.48	-0.08	0.48 ***	0.24 **	0.12	0.05	0.27 ***	-0.32 ***	-0.13	-0.05	0.04	-0.33 ***	-0.32 ***		
14. Group_size	11.88	3.06	0.04	0.33 ***	0.61 ***	-0.01	0.11	0.00	0.34 ***	0.72 ***	0.08	0.05	0.18 *	-0.11	-0.06	
15. Subgroup_imbalance	0.85	1.06	0.22 *	0.15 **	0.62 ***	-0.25 **	-0.11	-0.03	-0.28 ***	-0.48 ***	-0.29 ***	-0.06	-0.15	-0.08	0.32 ***	-0.07

Table 3

Univariate analysis of differences between firms accused of fraud and matched firms

Variable	Mean	Standard Deviation	Difference in Mean (*p*-value)	Difference in Median (*p*-value)
TMT_diversity				
Accused of fraud	-0.92	2.43	0.015	0.008
Matched sample	0.46	2.53		
BOD_diversity				
Accused of fraud	-0.88	2.43	0.023	0.026
Matched sample	0.44	2.77		
delta_diversity				
Accused of fraud	-0.67	0.45	0.445	0.349
Matched sample	-0.59	0.49		

Logistic Regression. A logistic model is fitted for the 90 firms using a maximum likelihood estimation procedure. Results from the logistic regression are in Table 4. Two of the three hypotheses forwarded in this study were supported. Hypothesis 1 asserts that the greater the level of diversity in top management teams, the less likely the subsequent incidence of fraudulent financial reporting, which was strongly supported by results (beta = -0.37, $p < .01$) in Model 1. Hypothesis 2 states that diversity decreases the likelihood of fraudulent financial reporting, and Model 2 showed a significant ($p < .05$) and negative (beta = -0.36) effect. Furthermore, the regression shows that fraudulent financial reporting is significantly related to younger age, both within the top management team and within the board of directors. These results are consistent with predictions in previous studies including Zahra et al. (2005) and Daboub et al. (1995). Two variables were considered to test Hypothesis 3, i.e.,

factional faultline size and delta diversity, but the factional faultline size variable was taken out from the results in Table 4. Only the subgroup imbalance variable was significant in Model 3. Overall, the results indicate that the decision to issue fraudulent financial statements is more likely to occur when the top management team is comprised of demographically homogenous individuals. These decisions are also less likely to be effectively monitored and prevented by a board that is comprised of demographically homogenous directors.

Table 4

Results of the logistic regression analysis of 30 firms accused of fraud and 60 matched firms

	Predicted sign	Model 1 Coefficient estimate	Model 1 *t*-statistic	Model 2 Coefficient estimate	Model 2 *t*-statistic	Model 3 Coefficient estimate	Model 3 *t*-statistic
Intercept	?	1.973	0.540	5.022	1.468	-2.288	-2.010 **
TMT_diversity	−	-0.370	-2.762 ***				
TMT_size	?	0.418	2.173 **				
TMT_mean_age	−	-0.113	-1.672 *				
TMT_mean_tenure	−	0.085	1.713 *				
TMT_mean_gender	−	0.022	0.008				
BOD_diversity	−			-0.360	-2.343 **		
BOD_size	+			0.114	1.037		
BOD_mean_age	−			-0.124	-1.933 *		
BOD_mean_tenure	−			-0.003	-0.037		
BOD_mean_gender	−			6.878	1.789 *		
Factional_faultline_size	−						
Delta_diversity	−					-0.846	-1.580
Group_size	?					0.040	0.513
Subgroup_imbalance	?					0.666	2.169 **
Likelihood ratio		19.2058		14.1665		7.2931	
Degrees of freedom		5		5		3	
Model *p*-value		0.0018		0.0146		0.0631	

* $p < .10$
** $p < .05$
*** $p < .01$

Discussion

The findings of this study both support and extend those of previous research. A number of the statistical control variables used in this study are significantly related to the likelihood of fraudulent financial reporting. These results confirm the important role of top management team and board of director composition in the occurrence of financial statement fraud. First, mean age is negatively related to the likelihood of fraud, both in the case of top management team and in the case of the board of directors. Age has been documented in research to influence unethical decisions as well as deliberateness in decision making, resulting in more accurate diagnosis of the information gathered and greater willingness to reconsider (Child, 1974; Zahra et al., 2005). Second, top management team tenure is positively related to the likelihood of fraudulent financial reporting. Although some studies have suggested that more mobile, short-tenured senior executive are more likely to engage in illegal activities (Clinard et al., 1979), others have asserted that long-tenured executives may become more resistant to change and simultaneously more likely to passively acquiesce to fraud (Daboub et al., 1995). Unlike some previous findings (e.g., Dunn, 2004), results from this study are consistent with the latter argument. Furthermore, Table 4 shows that subgroup imbalance also produces a greater likelihood of fraudulent financial reporting. To reiterate, subgroup imbalance measures the absolute difference between the ratio of top management team size and the number of outside directors and equality. In other words, when top executives and outside directors are equal in number, the value of subgroup imbalance would be minimized. This, along with the notable, positive relationship between top management team size and the likelihood of fraud, indicates that greater number of individuals in the top management increases the propensity for

illegal behavior to go undetected, and that a sufficient number of outside directors may be required to adequately monitor executive wrongdoings.

This study also extended prior research by evaluating existing claims suggesting that the problem concerning the veracity of financial reporting may not be that there is a lack of corporate governance structures, but rather that these structures are not in a productive relationship with management (Martin, 2002). In doing so, this study suggested that demographic similarity or dissimilarity between the top management team and the corporate board would reflect the interpersonal dynamics among those individuals, which may deteriorate or enhance monitoring activity. Furthermore, while the majority of work on demographic diversity of top management teams or boards has focused on its impact on performance or strategic decision making outcomes such as Tobin's Q, innovativeness, or competitive action, this study put its focus on the important yet understudied topic of top management fraud. This is the first study to simultaneously look at the demography of the top management team and the board of directors, and the first to empirically test demographic diversity measures against financial statement fraud.

Demographic Faultline and Factional Groups

While attempting to add to the recent literature on demographic faultline, this study could not find any empirically significant or conclusive results. Lau and Murnighan (1998) introduced the concept of demographic faultline to explain the group dynamics in which subgroups are formed based on demographic features. According to their explanation, demographic faultline exists when a group has distinct, dissimilar subgroups and members of each subgroup share similarities on multiple demographic features. Under this definition, homogenous groups and very heterogeneous groups do not have faultlines. Li and Hambrick (2005)

expanded on the idea by suggesting that in some circumstances subgroups with strong faultlines are inevitably present – particularly when two separate groups come together to join a single group but remain salient to their status as delegates of respective groups. They referred to these subgroups as factional groups. Because hypothesis 3 of this study examined the demographic dissimilarity between top management team and board of directors, an empirical investigation has been made assuming that the top management team and the group of outside directors are each a factional group and testing whether faultline size is associated with the likelihood of fraudulent financial reporting. Measures following Li and Hambrick (2005) have resulted in insignificant findings, however, which can be interpreted as the following. For one, the underlying assumption that top management team and group of outside directors are factional groups may have been inadequate. Unlike the theoretical description by Li and Hambrick (2005), members of these subgroups may not be "wary" of each other or be "a priori distrusting" of each other. In fact, top executives and directors are not vastly different in their demographic attributes; they are by and large similar in their backgrounds. Also relevant is the fact that top executives – especially the chief executive – play a role in selecting outside directors and vice versa. Recent research has shown that in such process, people tend to hire someone with a common background to theirs, especially when he or she differs from them in some other demographic aspect. Top executives and board directors seem to be altogether a quite homogenous group. On the other hand, although simply applying the concept of factional groups on top management team and board of directors seems inadequate, future research may apply other methods suggested by Thatcher, Jehn, and Zanutto (2003) or Lawrence and Zyphur (2010) to try and determine

where a faultline may exist within the larger group of upper-echelon individuals.

Results from this study suggest that fraudulent financial reporting may be directly affected by the demographic diversity of those that are involved. In fact, the discussion of the effects of diversity in this study serves as a reminder of the importance of demography variables in the interpersonal dynamics among top management and the board. What may be just as relevant to effective monitoring as corporate governance structure are the characteristics and composition of its individual participants.

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Appendix

Functional Background

1. Finance/accounting
2. Legal
3. Production/operations
4. Administration
5. Marketing/sales
6. Engineering/R&D
7. Government/military/politician
8. Academic/educator/nonprofit

Educational Background

1. Arts
2. Sciences (BS, MS, excl. business majors)
3. Engineering
4. Business and Economics
5. Law

Distribution of the Sample of Firms, by Year

Fraud Year	
1998	6.67%
1999	6.67%
2000	16.67%
2001	16.67%
2002	20.00%
2003	3.33%
2004	6.67%
2005	3.33%

2006	20.00%
	100.00%

Distribution of the Sample of Firms, by Industry

Industry	
15	6.67%
20	3.33%
28	3.33%
34	3.33%
35	23.33%
36	13.33%
37	13.33%
38	3.33%
59	6.67%
73	20.00%
79	3.33%
	100.00%

국문초록

최고경영진의 인구통계학적 다양성과 이사회의 인구통계학적 다양성이 재무제표 사기 발생에 미치는 영향

본 연구는 최고경영진 구성원들의 인구통계학적 다양성과 이사회 구성원들의 인구통계학적 다양성이 해당 기업에서의 재무제표 사기 발생에 어떠한 영향을 미치는지 검토하였다. 특히 이사회의 인구통계학적 구성을 최고경영진의 인구통계학적 구성에 대비하여 분석함으로써 두 집단간 존재하는 인구통계학적 구성의 차이가 재무제표 사기 발생을 줄여줄 수 있는지, 즉 인구통계학적 다양성이 효과적인 감시 (monitoring)에 긍정적인 역할을 할 수 있는지 살펴보았다. 재무제표 사기가 발생한 30 개의 기업과 이에 대응하는 60 개 기업의 최고경영진 및 이사회 구성원들에 대한 자료를 대상으로 로지스틱 회귀분석을 실시한 실증분석 결과 나이, 재임 기간, 성별, 기능적 배경, 교육 배경에 기반한 최고경영진과 이사회 구성원들의 인구통계학적 다양성과 재무제표 사기 발생은 부적인 관계를 가짐이 드러났다. 본 연구는 그 동안 최고경영진의 인구통계학적 특성 연구에서 실증적으로 다루어지지 않은 재무보고상 부정행위에 대한 분석을 실시하였고, 나아가 이사회의 감시기능에 대한 연구에서 이사회의 특성과 최고경영진의 특성을 동시에 분석하여 그들간의 집단 역학을 고려할 것을 제안함으로써 향후 연구의 방향을 제시하였다는데 의의가 있다.

주요어 : 기업지배구조, 이사회 모니터링, 이사회 다양성, 최고경영진 다양성, 최고경영진 부정행위, 재무제표 사기

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